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Mattingly, Stanger & Malur, P.C
1800 Diagonal Road, Suite 370
Alexandria, VA 22314

EXAMINER	
SHINGLES, KRISTIE D	
ART UNIT	PAPER NUMBER
2141	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/082,326	URATANI ET AL.	
	Examiner	Art Unit	
	Kristie D. Shingles	2141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments
Claims 15 and 24 have been amended.
Claims 1-14 are cancelled.

Claims 15-29 are pending.

Response to Arguments

I. Applicant's arguments (see Remarks pages 10-15 filed 4/9/2007) with respect to claims 15, 17, 19, 20, 21 and 24 have been considered but are not persuasive.

A. Regarding Claims 15, 17, 19, 20 and 24: Applicant argues that while "a management logical unit" is not present in Applicant's specification, it is defined in the claims as "a command device" which is discussed throughout Applicant's specification.

Examiner advises Applicant to use claim language consistent with Applicant's specification. The term "management logical unit" is not present in the specification; however, since the "management logical unit" is defined in claims 15, 20 and 24 as a "command device" and the specification supports the use and functions of a command device, Applicant is therefore advised to replace all instances of "management logical unit" in the claims with "command device" for clarity.

B. Regarding Claims 15, 20, 24 and 28: Applicant argues that support for the claim limitation: "*a command device dedicated for coupling control for controlling coupling between the plurality of logical units*" is found in the background discussion and the detailed description portion of Applicant's specification.

however this is not equivocal to the claimed statement of controlling coupling *between* the plurality of logical units. Although Applicant's specification supports coupling from the command device to the logical unit(s), it does not describe the coupling-operations as such to include coupling between logical units. Applicant's arguments are therefore unpersuasive and the 112 rejection is maintained.

C. **Regarding Claims 15, 21 and 24: Applicant argues that support for the claim limitation: *"wherein said management logical unit is used to couple one of said logical units with another one of said logical units in response to an instruction received from one of said host computer adapters"* is found in the background discussion and the detailed description portion of Applicant's specification.**

Examiner respectfully disagrees. The portions cited by Applicant support the host issuing coupling commands from the command device to the logical units, however this differs from the functionality described in the claim language. The claim language states that management logical unit [command device] "is used to couple one of said logical units with another one of said logical units" yet Applicant's specification does not describe the coupling-operations as such; according to the specification, the coupling operations are for coupling logical units to the command device, wherein the coupling commands are issued from the host (page 1 paragraph 0002, page 5 paragraph 0016). Applicant's arguments are therefore unpersuasive and the 112 rejection is maintained.

D. **Regarding Claim 15: Applicant argues that support for the claim limitation: *"wherein said first host computer adapter can command coupling of two logical units in said first group of logical units by using said management logical unit, and cannot command coupling of two logical units in said second group of logical units; wherein the second host computer adapter can command the coupling of two logical units in said second group of logical units by using said management logical unit, but cannot command the coupling of two logical units in said first group of logical units"* is found in the background discussion and the detailed description portion of Applicant's specification.**

Examiner respectfully disagrees. As stated above, the claim language states that management logical unit [command device] "is used to couple one of said logical units with another one of said logical units", yet Applicant's specification does not describe the coupling-operations as such. Furthermore, Applicant's specification is silent in using the management logical unit [command device] to couple "two logical units in the first group" and "two logical units in the second group". The citations provided by Applicant do not support these claim limitations, the specification (page 8 paragraph 0028, page 9 paragraph 0029) along with the drawings (Figures 1 and 2) describe that each host adapter accesses the respective command device in its group, which allows the command device to access the logical units within the group wherein LUN security prevents the command devices from accessing logical units outside the respective group. Applicant has failed to show coherency between the claim invention and the invention described in the specification, thus the 112 rejection of claim 15 is maintained and correction is required.

Claim Rejections - 35 USC § 112, first paragraph

II. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

III. Claims 15-17, 19, 20, 21, 24 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claims contain subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- **Regarding Claim 15:** the specification fails to explicitly teach the following features found in Claim 15—"wherein said management logical unit is used to couple one of said logical units with another one of said logical units in response to an instruction received from one of said host computer adapters, wherein said first host computer adapter can command coupling of two logical units in said first group of logical units by using said management logical unit, and cannot command coupling of two logical units in said second group of logical units; wherein the second host computer adapter can command the coupling of two logical units in said second group of logical units by using said management logical unit, but cannot command the coupling of two logical units in said first group of logical units"—correction is required.

- **Regarding Claims 16 and 25:** the specification fails to distinctly teach the following limitation recited in the listed claims—"for copying logical units"—correction is required.

- **Regarding Claim 21:** the specification fails to distinctly teach the following limitation of Claim 21—"issuing the instructions for a coupling operation by the host for directing coupling of one of the first logical units to another of the first logical units"—correction is required.

- **Regarding Claim 24:** the specification fails to distinctly teach the following limitation of Claim 24—"wherein the storage system processes the coupling operation in accordance with the instructions written to the command device for coupling one of the first logical units to another one of the fist logical units"—correction is required.

- **Regarding Claims 15, 17, 19, 20 and 24:** the specification fails to distinctly teach the following element recited in the listed claims—"a management logical unit"—correction is required.

- **Regarding Claim 28:** the specification fails to distinctly teach the following limitation of Claim 28—"wherein the command device is a shared logical unit used exclusively for communication with the host computer for controlling coupling operations between logical units"—clarification and/or correction is required.

Claim Rejections - 35 USC § 112, second paragraph

IV. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

V. Claims 15, 16, 24 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. **Claim 15** recites the limitations:

- "said second group of logical units" in lines 8-9, 16-17 and 19;
- "said first group of logical units" in lines 9, 14-15 and 20-21;
- "one of said logical units" in lines 10-11;
- "another one of said logical units" in line 11;
- "two logical units" in lines 14, 16, 18-19 and 20;
- "logical units" in lines 33 and 36;
- "any logical units" in line 37-38.

There is insufficient antecedent basis for these limitations in the claim.

b. **Claim 16** recites the limitation "logical units" in line 2. There is insufficient antecedent basis for this limitation in the claim.

c. **Claim 24** recites the limitations:

- "extended logical unit information" in line 13. There is insufficient antecedent basis for this limitation in the claim.

- The term "virtually" in claim 24 is a relative term, which renders the claim indefinite. The term "virtually" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Clarification and/or correction is required.

d. **Claim 28** recites the limitation "logical units" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

VII. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

VIII. Claims 15 - 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over *DeKoning* (US 6,671,776) in view of *Applicant Admitted Prior Art* (US Publication 2002/0143903—hereafter referred to as—*AAPA*) and *Kedem* (US 6,725,331).

a. **Per claim 15**, *DeKoning* teaches a computer system comprising:

- a storage system having a plurality of logical units defined (*col.4 lines 20-33*);
- a first host computer adapter for a host computer that can access a first group of first logical units of said plurality of logical units and that cannot access a second group of second logical units of said plurality of logical units (*Figures 1 and 4, col.3 lines 63-65, col.4 lines 12-34, col.5 line 60-col.6 line 11, col.6 lines 30-63—provision for a first host adapter to access a first group of logical units but unable to access another group of logical units*);
- a second host computer adapter that can access said second group of logical units, but that cannot access said first group of logical units (*Figures 1 and 4, col.3 lines 63-65, col.4 lines 12-34, col.5 line 60-col.6 line 11, col.6 lines 30-63—provision for a second host adapter to access a second group of logical units but unable to access a first group of logical units*);
- an application included on said host for issuing the instruction for coupling operations among said plurality of logical units, (*col.6 line 64-col.7 line 27, col.8 lines 30-53*);
- wherein the storage system adds extended logical unit numbers used in coupling to a response of an inquiry command from said host to a specified logical unit, each said extended logical unit number including a connection port, a target ID,

and a logical unit number (*col.3 lines 1-33, col.6 Table, col.8 lines 46-53—provision for extended LUNs and indicia for LUNs including port ID, target ID, host adapter number and LUN number*);

- whereby the application obtains a list of extended logical unit numbers corresponding to logical units accessible by the host out of said plurality of logical units (*col.6 line 64-col.7 line 27, col.8 lines 30-53—provision for LUN assignment and topology data which associates LUNs with their respective hosts and host adapters*); and

- wherein the application rejects a request of a coupling operation directed to logical units other than said logical units corresponding to the extended logical unit numbers on the list, thereby inhibiting coupling operations directed to any logical units not accessible by the host (*col.6 lines 30-63*).

DeKoning teaches the use of controllers that control the coupling of the logical volumes (*col.4 lines 12-35, col.6 line 64-col.7 line 27*), however, *DeKoning* fails to explicitly teach having a management logical unit as a command device dedicated for coupling control for controlling coupling between the plurality of logical units and said application capable of issuing the instructions for the coupling operations to said management logical unit. However *AAPA* teaches the implementation of the management logical unit as a command device that is a shared logical unit used for executing coupling-commands from the host computer to logical units (*page 1 paragraph 0002*).

Although *DeKoning* and *AAPA* fail to explicitly teach: wherein the management logical unit is used to couple one of said logical units with another of said logical units; wherein said first host computer adapter can command coupling of two logical units in said first group of logical units by using said management logical unit, and cannot command coupling of two logical units in said second group of logical units; wherein the second host computer adapter can command the coupling of two logical units in said second group of logical units by using said

management logical unit, but cannot command the coupling of two logical units in said first group of logical units—it is obvious from *DeKoning's* teaching of permitting hosts/host adapters to access only the LUNs assigned to them (*col.6 lines 30-63*) that a host adapter cannot command coupling to LUNs not in the group of LUNs assigned to the host adapter.

However *Kedem* further teaches the coupling of one logical unit to another for mirroring logical volumes in response to instructions from the host (*Figure 1, col.3 line 33-col.4 line 40, col.6 lines 2-29*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *DeKoning* with *AAPA* and *Kedem* for the purpose of implementing host commands to access, link, read/write to their associated LUNs while allowing only specific hosts and/or adapter to access the LUNs allocated to them; which provides prevents illegal access to information and insures the integrity of reading/writing data into respective LUNs. Furthermore, allowing the coupling of LUNs together allows for the mirrored copies of the LUNs which prevents the loss of data in the LUNs in case one of the LUNs fail or become inoperable.

b. **Claims 20, 24, 28 and 29** contain limitations that are substantially equivalent to claim 15 and are therefore rejected under the same basis.

c. **Per claim 16,** *DeKoning* with *AAPA* and *Kedem* teach the computer system of claim 15, *Kedem* further teaches wherein said coupling operations are for copying logical units (*col.5 lines 1-47, col.6 lines 2-29, col.17 lines 51-64*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *DeKoning* with *AAPA* and *Kedem* for copying LUNs which prevents the loss of data in the LUNs in case of a LUN failure.

d. **Claim 25** is substantially equivalent to claim 16 and is therefore rejected under the same basis.

e. **Per claim 17,** *DeKoning* with *AAPA* and *Kedem* teach the computer system of claim 15, *DeKoning* further teach wherein the management logical unit is shared between a plurality of ports (*DeKoning*: *Figures 4 and 5* and *AAPA: page 1 paragraphs 0002-0003*).

f. **Claim 26** is substantially equivalent to claim 17 and is therefore rejected under the same basis

g. **Per claim 18,** *DeKoning* with *AAPA* and *Kedem* teach the computer system of claim 15, *DeKoning* further teaches wherein said host is capable of issuing a command for the coupling operation only via the application (*col.6 line 64-col.7 line 27, col.8 lines 30-53*).

h. **Claim 27** is substantially equivalent to claim 18 and is therefore rejected under the same basis.

i. **Per claim 19,** *DeKoning* with *AAPA* and *Kedem* teach the computer system of claim 18, *DeKoning* further teaches wherein the instruction for the coupling operation is written into the management logical unit as data, and the storage system processes the data written into the management logical unit for performing the coupling operation (*DeKoning*: *col.4 lines 12-35, col.6 line 64-col.7 line 27* and *AAPA: page 1 paragraph 0002*).

j. **Claims 21-23** are substantially equivalent to claims 18 and 19 and are therefore rejected under the same basis.

Conclusion

IX. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Hubis et al (6,343,324), Yorimitsu (6,173,339), Ofer et al (5,973,690), Lui et al (5,812,754), Marks et al (5,790,775).

X. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie D. Shingles whose telephone number is 571-272-3888. The examiner can normally be reached on Monday 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kristie D Shingles
Examiner
Art Unit 2141

kds

RUPAL DHARIA
SUPERVISORY PATENT EXAMINER